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Skin Cancer

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What You Need To Know About Skin Cancer

The National Cancer Institute (NCI) has prepared this booklet to help patients who have skin cancer, their families, and other interested people. The information presented here—on the signs and symptoms, diagnosis, and treatment of skin cancer—is intended to add to talks with doctors and nurses. (Another type of cancer that occurs in the skin is called melanoma. It is *not* talked about in this booklet.)

Research sponsored by the NCI and by other groups has led to better methods of diagnosing and treating this disease. It is encouraging to know that skin cancer is now almost 100 percent curable if found early and treated promptly.

Our knowledge about skin cancer and other types of cancer is increasing rapidly. For up-to-date information on this subject, you may call the Cancer Information Service (CIS) toll-free at 1-800-4-CANCER.

Throughout this booklet, words that may be new to readers are printed in *italics* and explained briefly. Definitions of these and other medical terms related to skin cancer begin on page 13. A “sounds-like” spelling is also given for some words.

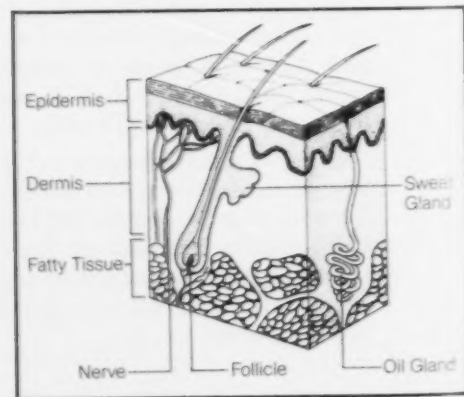
Other NCI publications about cancer, its treatment, and living with the disease are listed on page 20, and the NCI-supported CIS is described on page 18. The CIS provides information about cancer and cancer-related resources to patients, their families, and the public.

The Skin

The skin is the body's outer covering. It protects us against heat and light, injury, and infection. It regulates body temperature and stores water, fat, and vitamin D. Weighing about 6 pounds, the skin is the body's largest organ. It is made up of two main layers: the outer *epidermis* and the inner *dermis*.

The epidermis (outer layer of skin) is mostly made up of flat, scale-like cells called *squamous cells*. Under the squamous cells are round cells called *basal cells*. The deepest part of the epidermis also contains *melanocytes*. These cells produce *melanin*, which gives the skin its color.

The dermis (inner layer of skin) contains blood and lymph vessels, hair *follicles*, and glands. These glands produce sweat, which helps regulate body temperature, and *sebum*, an oily substance that helps keep the skin from drying out. Sweat and sebum reach the skin's surface through tiny openings called pores.



What Is Cancer?

Cancer is a group of more than 100 diseases. Although each disease differs from the others in many ways, every cancer is a disease of some of the body's cells.

Healthy cells that make up the body's tissues grow, divide, and replace themselves in an orderly way. This process keeps the body in good repair. Sometimes, however, normal cells lose their ability to limit and direct their growth. They divide too rapidly and grow without any order. Too much tissue is produced, and *tumors* begin to form. Tumors can be *benign* or *malignant*.

- Benign tumors are not cancer. They do not spread to other parts of the body and are seldom a threat to life. Often, benign tumors can be removed by surgery, and they are not likely to return.
- Malignant tumors are cancer. They can invade and destroy nearby healthy tissues and organs. Cancer cells also can spread, or *metastasize*, to other parts of the body and form new tumors.

Types of Skin Cancer

The two most common kinds of skin cancer are *basal cell carcinoma* and *squamous cell carcinoma*. (*Carcinoma* is cancer that begins in the cells that cover or line an organ.) Basal cell carcinoma accounts for more than 90 percent of all skin cancers in the United States. It is a slow-growing cancer that seldom spreads to other parts of the body. Squamous cell carcinoma also rarely spreads, but it does so more often than basal cell carcinoma.

However, it is important that skin cancers are found and treated early because they can invade and destroy nearby tissue.

Basal cell carcinoma and squamous cell carcinoma are sometimes called *nonmelanoma skin cancer*. Another type of cancer that occurs in the skin is *melanoma*, which begins in the melanocytes. More information about this disease can be found in the booklet *What You Need To Know About Melanoma*.

Cause and Prevention

Skin cancer is the most common type of cancer in the United States. According to present estimates, 40 to 50 percent of Americans who live to age 65 will have skin cancer at least once.

Several *risk factors* increase the chance of getting skin cancer. *Ultraviolet (UV) radiation* from the sun is the main cause of skin cancer. Artificial sources of UV radiation, such as sunlamps and tanning booths, can also cause skin cancer. Although anyone can get skin cancer, the risk is greatest for people who have fair skin that freckles easily—often those with red or blond hair and blue or light-colored eyes.

The risk of developing skin cancer is also affected by where a person lives. People who live in areas that get high levels of UV radiation from the sun are more likely to get skin cancer. In the United States, for example, skin cancer is more common in Texas than it is in Minnesota, where the sun is not as strong. Worldwide, the highest rates of skin cancer are found in South Africa and Australia, areas that receive high amounts of UV radiation.

In addition, skin cancer is related to lifetime exposure to UV radiation. Most skin cancers appear after age 50, but the sun's damaging effects begin at an early age. Therefore, protection should start in childhood to prevent skin cancer later in life.

Protective clothing, such as sun hats and long sleeves, can block out the sun's harmful rays. Also, lotions that contain sunscreens can protect the skin. Sunscreens often contain PABA (*para-aminobenzoic acid*) and are rated in strength according to an SPF (Sun Protection Factor), which ranges from 2 to 15 or higher. The higher the number on the label, the greater the protection a sunscreen provides, meaning more of the sun's harmful rays will be blocked out.

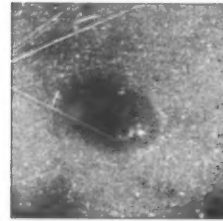
The NCI is supporting research on skin cancer prevention using natural and man-made substances to prevent cancer, especially in people who have a high risk of developing the disease. For example, scientists are trying to determine whether the chance of getting skin cancer can be reduced by eating foods rich in vitamin A and a precursor of vitamin A called beta-carotene.

Symptoms

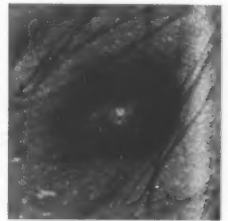
The most common warning sign of skin cancer is a change on the skin, especially a new growth or a sore that doesn't heal. Skin cancer has many different appearances. For example, it may start as a small, smooth, shiny, pale, or waxy lump. Or, the cancer can appear as a firm red lump. Sometimes, the lump bleeds or develops a crust. Skin cancer can

also start as a flat, red spot that is rough, dry, or scaly. Pain is NOT a sign of skin cancer.

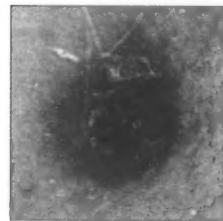
The pictures below show some examples of skin cancer.



Small, smooth, shiny, pale, or waxy lump

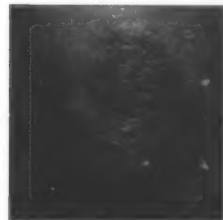


Firm red lump

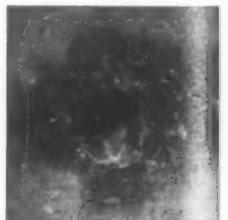


A lump that bleeds or develops a crust

*Photos courtesy of
NCI's Dermatology Branch*



A flat, red spot that is rough, dry, or scaly



Both basal and squamous cell cancers are found mainly on areas of the skin that are exposed to the sun—the head, face, neck, hands, and arms. However, skin cancer can occur anywhere.

Another condition that can affect the skin is *actinic keratosis*, which appears as rough, red or brown, scaly patches on the skin. Because actinic keratosis sometimes develops into squamous cell cancer, it is known as a *precancerous* condition. Like skin cancer, it usually appears on sun-exposed areas but can be found elsewhere.

Changes in the skin are not sure signs of cancer; however, it is important to see a doctor if any symptom lasts longer than 2 weeks.

Detection and Diagnosis

Detection

The cure rate for skin cancer could be 100 percent if all skin cancers were brought to a doctor's attention before they had a chance to spread. Therefore, people should check themselves regularly for new growths or other changes in the skin. Any new, colored growths or any changes in growths that are already present should be reported to the doctor without delay. (See page 21 for a simple guide on how to do a skin self-exam.)

Doctors should also look at the skin during routine physical exams. Persons who have already had skin cancer should be sure to have regular exams so that the doctor can check the skin—both the treated areas and other places where cancer may develop.

Diagnosis

Basal cell carcinoma and squamous cell carcinoma are generally diagnosed and treated in the same way. When an area of skin does not look normal, the doctor may remove all or part of the growth. This is called a *biopsy*. To check for cancer cells,

the tissue is examined under a microscope by a *pathologist* or a *dermatologist*. A biopsy is the only sure way to tell if the problem is cancer.

Doctors generally divide skin cancer into two *stages*: local (affecting only the skin) or metastatic (spreading beyond the skin). Because skin cancer rarely spreads, a biopsy often is the only test needed to determine the stage. In cases where the growth is very large or has been present for a long time, the doctor will carefully check the *lymph nodes* in the area. In addition, the patient may need to have additional tests, such as special x-rays, to find out whether the cancer has spread to other parts of the body. Knowing the stage of a skin cancer helps the doctor plan the best treatment.

Treating Skin Cancer

Treatment Planning

Before starting treatment, the patient might want a second doctor, such as a dermatologist or a *plastic surgeon*, to review the diagnosis and planned treatment. If so, there are a number of ways to get a second opinion:

- Patients and their doctors can get the names of other doctors (including dermatologists and plastic surgeons) to consult from a local medical society, a nearby hospital or medical school, or the *Directory of Medical Specialists*, a book found in many libraries. Patients may also contact the American Academy of Dermatology and the American Society of Plastic and Reconstructive Surgeons. The addresses and telephone numbers of these organizations are given on page 19.

- Names of doctors who treat cancer patients are also available from PDQ (Physician Data Query). In addition, doctors may use this NCI computerized system to find up-to-date treatment information for skin cancer and other major types of cancer. (Additional information about PDQ is found on page 13.)
- The Cancer Information Service, at 1-800-4-CANCER, also may be able to help patients locate doctors to consult for a second opinion.

Treatment for skin cancer may involve *surgery, radiation therapy, or cryosurgery*. Sometimes, a combination of these methods is used. The doctor considers a number of factors to determine the best treatment for skin cancer, such as the location of the cancer, its size, and whether or not the cancer has spread beyond the skin. The doctor's main objective is to destroy the cancer completely while causing as little scarring as possible.

Surgery

Most skin cancers can be removed quickly and easily by surgery. Sometimes, the cancer is completely removed at the time of biopsy, and no further treatment is needed.

To remove small skin cancers, doctors commonly use a special type of surgery called *curettage*. After a local anesthetic numbs the area, the cancer is scooped out with a *curette*, an instrument with a sharp, spoon-shaped end. Then, the area is generally treated by *electrodesiccation*. An electric current from a special machine is used to control bleeding and kill any cancer cells remaining around the edge of the wound.

Mohs' technique is a special type of surgery used for skin cancer. It is especially helpful for treating skin cancer in cases where the shape and depth of the tumor are hard to determine. In addition, this method is used to treat skin cancers that have recurred. The cancer is shaved off one thin layer of skin at a time until the entire tumor is removed. This method should be used only by doctors who are specially trained in this type of surgery.

Sometimes, when a large cancer is removed, a *skin graft* may be needed. For this procedure, the doctor takes a piece of skin from another part of the body to replace the skin that was removed. Surgery to remove skin cancers, with or without skin grafts, may cause scars.

Cryosurgery

Extreme cold may be used to treat precancerous skin conditions, such as actinic keratosis, as well as skin cancers. In cryosurgery, liquid nitrogen is applied to the growth to freeze and kill the abnormal cells. After the area thaws, the dead tissue falls off. More than one freezing may be needed to remove the growth completely. Cryosurgery does not require anesthesia, but patients may have pain after treatment. A white scar may form in the treated area.

Radiation Therapy

Skin cancer responds well to radiation therapy (also called x-ray therapy, radiotherapy, or irradiation), which uses high-energy rays to kill cancer cells. This treatment is used for cancers that occur in areas that are hard to treat with surgery. For example, radiation therapy might be used to treat skin cancers of the eyelid, the tip of the nose, and the ear. Several treatments may be needed to remove all of the cancer

cells. During radiation therapy, patients may notice skin reactions, such as rashes or redness, in the area being treated. Changes in skin color and/or texture may develop, becoming more noticeable many years later.

Topical Chemotherapy

Topical chemotherapy is the use of anti-cancer drugs in a cream or lotion applied to the skin surface. Actinic keratosis can be treated effectively with the anticancer drug *fluorouracil* (also called 5-FU). The 5-FU cream or lotion is applied daily for several weeks. Intense inflammation is common during treatment, but scars usually do not occur.

Followup Therapy

Even though most patients with skin cancer are cured, this type of cancer is the one most likely to recur. That's why it's so important for patients to continue to examine themselves regularly, to visit their doctor for regular checkups, and to follow their doctor's instructions on how to reduce their risk of developing skin cancer again.

Questions To Ask the Doctor

Skin cancer has a better *prognosis*, or outcome, than most other types of cancer; it is curable in over 95 percent of cases. But any diagnosis of cancer can be frightening, and it's natural to have concerns about medical tests, treatments, and doctors' bills.

Patients have many important questions to ask about cancer, and their doctor is the best person to provide answers. Most people want to know exactly what kind of

cancer they have, how it can be treated, and how successful the treatment is likely to be. The following are some other questions that patients might want to ask their doctor:

- What types of treatment are available?
- Are there any risks or side effects of treatment?
- Will there be a scar?
- Will I have to change my normal activities?
- How can I protect myself from getting skin cancer again?
- How often are checkups needed?

Some patients become concerned that treatment may change their appearance, especially if the skin cancer is on their face. Patients should discuss this important concern with their doctor. And they may want to have a second opinion from a plastic surgeon before treatment.

Skin Cancer Research

Scientists at hospitals and medical centers throughout the country are studying possible causes of skin cancer and ways the disease can be prevented. The outlook for patients with early skin cancer is excellent; nearly all of them can be cured. In addition, new methods of treatment are controlling more advanced skin cancer. Improvements in surgery have also reduced scarring.

When research gives encouraging results for a new treatment method, it is used to treat cancer patients in *clinical trials*. These trials are designed to answer scientific questions and to find out if a promising treat-

ment is both safe and effective. Patients who take part in research make an important contribution to medical science and may have the first chance to benefit from improved treatment methods.

Patients with skin cancer who want to participate in a trial should discuss their interest with a doctor. (Such studies are the subject of *What Are Clinical Trials All About?*, an NCI publication for patients who may be interested in participating in clinical research.)

PDQ (Physician Data Query) is a database that helps doctors learn about these trials. A doctor may obtain information from PDQ by using an office computer or the services of a medical library. Most Cancer Information Service (CIS) offices will provide PDQ searches to physicians and can tell them how to obtain regular access to the database. Information about current research is also available to patients through the CIS.

Medical Terms

Actinic keratosis (ak-TIN-ik ker-a-TO-sis): A precancerous condition of thick and scaly patches of skin; also called solar or senile keratosis.

Anesthetic (an-es-THET-ik): A drug that causes loss of sensation or feeling in a part (local) or all (general) of the body.

Basal cell carcinoma (BAY-sal sel kar-si-NO-ma): A type of skin cancer that begins in the basal cells of the epidermis.

Basal cells: Small, round cells found in the lower part, or base, of the epidermis.

Benign tumor (bee-NINE): A growth that is not cancer and does not spread to other parts of the body.

Biopsy (BY-op-see): The removal and microscopic examination of a sample of tissue to see if cancer cells are present.

Cancer: A general term for more than 100 diseases in which abnormal cells grow and multiply rapidly. Cancer cells can spread through the blood or lymphatic system to start new cancers in other parts of the body.

Carcinoma (kar-si-NO-ma): A type of cancer that begins in the lining or covering tissues of an organ.

Clinical trials: Studies conducted with cancer patients, usually to evaluate new treatments. Each study is designed to answer scientific questions and to find better ways to treat patients.

Cryosurgery (kry-o-SIR-jer-ee): Destruction of tissue by applying extreme cold.

Curettage (kyoo-re-TAHZH): Removal of growths with a curette.

Curette (kyoor-ET): A spoon-shaped instrument with a sharp edge used to remove growths from the skin.

Dermatologist (der-ma-TOL-o-jist): A doctor who specializes in the diagnosis and treatment of skin problems.

Dermis (DER-mis): The lower layer of skin.

Electrodesiccation (e-LEK-tro-des-i-KAY-shun): Destruction of tissue using electric current.

Epidermis (ep-i-DER-mis): The surface layer of the skin.

Fluorouracil (floo-ro-YOOR-a-sil): An anti-cancer drug. Its chemical name is 5-fluorouracil, commonly called 5-FU.

Follicles (FAHL-i-kuls): Shafts through which hair grows.

Kaposi's sarcoma (KAP-o-seez sar-KO-ma): A relatively rare type of cancer that develops on the skin of some elderly persons or those with weak immune systems, including those with acquired immune deficiency syndrome (AIDS).

Lymph (limf): The almost colorless fluid that bathes body cells and contains cells that help fight infection.

Lymph nodes: Small, bean-shaped structures that act as filters, collecting bacteria or cancer cells.

Lymphatic system (lim-FAT-ik): The lymph nodes, spleen, and thymus, which produce and store infection-fighting cells. This system carries clear fluid called lymph, which bathes the body's cells.

Malignant (ma-LIG-nant): Cancerous (see CANCER).

Melanin (MEL-a-nin): The pigment of the skin. The amount of this substance accounts for variations in skin color in different people and different races.

Melanocytes (me-LAN-o-sites): Cells that form and contain a pigment called melanin.

Melanoma (mel-a-NO-ma): Cancer that begins in the melanocytes. Melanoma usually starts in the skin, often in a dark mole. Unlike the common skin cancers, melanoma tends to spread to internal organs.

Metastasize (me-TAS-ta-size): To spread from one part of the body to another. When cancer cells metastasize and form secondary tumors, the cells in the metastatic tumor are like those in the original tumor.

Mycosis fungoides (my-KO-sis fun-GOY-deez): A cancer of the body's immune, or defense, system. This cancer, also called T-cell lymphoma, first appears as skin tumors.

Nonmelanoma skin cancer: Skin cancer that does not involve melanocytes. Basal cell cancer and squamous cell cancer are nonmelanoma skin cancers.

Para-aminobenzoic acid (PAR-a-am-EE-no-BEN-zo-ik): A chemical used in some sunscreens; also called PABA. It helps protect the skin from the harmful rays of the sun.

Pathologist (pa-THOL-o-jist): A doctor who studies cells and tissues removed from the body, then makes a diagnosis based on the changes that disease causes in these cells.

Plastic surgeon: A surgeon who specializes in minimizing scarring or disfigurement that may occur as a result of disease (such as skin cancer), accidents, or birth defects.

Precancerous (pre-KAN-ser-us): A term used to describe a condition that may or is likely to become cancer.

Prognosis (prog-NO-sis): The probable outcome of a disease; the prospect of recovery.

Radiation therapy (ray-dee-AY-shun): The use of high-energy waves to treat disease. Sources of radiation include x-ray, cobalt, and radium.

Risk factor: A substance or condition that increases an individual's chance of getting a particular type of cancer.

Sebum (SEE-bum): An oily substance produced by the skin.

Skin graft: Skin that is moved from one part of the body to another.

Squamous cell carcinoma (SKWAY-mus sel kar-si-NO-ma): A type of skin cancer that begins in the squamous cells of the epidermis.

Squamous cells: Flat cells that look like fish scales and make up most of the epidermis.

Stage: The extent of disease.

Surgery: An operation.

T-cell lymphoma (lim-FO-ma): A cancer of the immune system that may occur in the skin; also called mycosis fungoides.

Topical chemotherapy (kee-mo-THER-a-pee): Treatment with anticancer drugs in a lotion or cream.

Tumor: An abnormal mass of tissue that results from too much cell division. Tumors perform no useful body function. They may be either benign or malignant.

Ultraviolet radiation (ul-tra-VI-o-let ray-dee-AY-shun): Cancer-causing energy that comes in the form of rays from the sun; also called UV radiation.

Resources

General information about skin cancer is widely available. Some useful resources and publications are listed below. You also may wish to check your local library or bookstore and to contact support groups in your community.

Cancer Information Service**1-800-4-CANCER**

In Hawaii, on Oahu, call 1-524-1234 (call collect from neighboring islands).

The NCI-supported CIS is a nationwide telephone service that responds to inquiries from cancer patients and their families, health care professionals, and the public. Information specialists are available to provide information and publications on all aspects of cancer. They also may know about cancer-related services in local areas. Spanish-speaking staff members are available to callers from the following areas (daytime hours only): Florida, Georgia, California, Illinois, New Jersey (area code 201), New York, and Texas. By dialing the CIS number, you will be connected to the CIS office serving your area.

American Cancer Society

1599 Clifton Road, NE
Atlanta, GA 30329
(404) 320-3333

The American Cancer Society (ACS) is a national voluntary organization that offers a wide range of services to patients and their families and carries out programs of research and education. Additional information about these activities can be obtained from the national headquarters or a local chapter (listed in the telephone book under American Cancer Society).

Skin Cancer Foundation

245 Fifth Avenue
New York, NY 10016
(212) 725-5176

This nonprofit organization provides a wide variety of publications on the diagnosis and treatment of skin cancer.

People are asked to send a stamped, self-addressed envelope for published materials. The Skin Cancer Foundation also publishes *Sun and Skin News* and *The Skin Cancer Foundation Journal*, which have nontechnical articles on the prevention and treatment of skin cancer.

American Academy of Dermatology

1567 Maple Avenue
Evanston, IL 60201
(312) 869-3954

The American Academy of Dermatology (AAD) is a professional organization of specialists who diagnose and treat skin problems. The AAD provides a publication on melanoma for the general public. Patients may receive referrals for dermatologists by calling (800) 238-2300.

American Society of Plastic and Reconstructive Surgeons

Suite 1900
233 North Michigan Avenue
Chicago, IL 60601
(800) 635-0635

The American Society of Plastic and Reconstructive Surgeons (ASPRS) offers names of board-certified plastic surgeons in a patient's area. The ASPRS also sends information on various surgical procedures.

For Further Information

The following printed materials may be helpful to cancer patients, their families, and others. They are available free of charge by calling 1-800-4-CANCER or writing:

Office of Cancer Communications
National Cancer Institute
Building 31, Room 10A24
Bethesda, MD 20892

- *Good News, Better News, Best News: Cancer Prevention*
- *Radiation Therapy and You: A Guide to Self-Help During Treatment*
- *Research Report: Melanoma*
- *Research Report: Nonmelanoma Skin Cancers—Basal and Squamous Cell Carcinomas*
- *Taking Time: Support for People With Cancer and the People Who Care About Them*
- *What Are Clinical Trials All About?*
- *What You Need To Know About Melanoma*

How To Do a Skin Self-Exam

You can improve your chances of finding skin cancer promptly by performing a simple skin self-examination each month.

The best time to do a skin self-examination is after a shower or bath. A skin self-exam should be done in a well-lighted room with a full-length mirror and a hand-held mirror. It's best to begin by learning where birthmarks, moles, and blemishes are located and what they usually look like. Anything new—a change in the size, texture, or color of a mole, or a sore that does not heal—should be noted.

Check *all* areas of the skin, including the back, the scalp, between the buttocks, and the genital area.

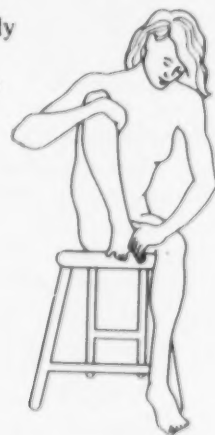
1 Look at the front and back of your body in the mirror, then raise your arms and look at the left and right sides.

2 Bend your elbows and look carefully at the palms, the forearms, including the undersides, and the upper arms.

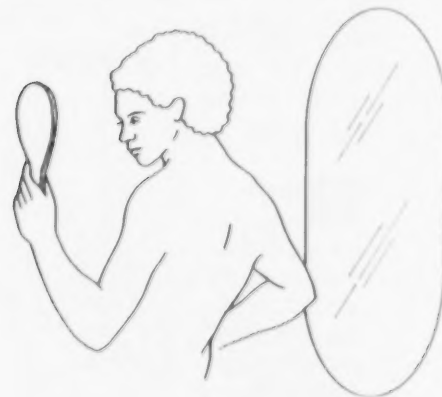


3 Examine the back and front of the legs. Also look between the buttocks and around the genital area.

4 Sit and closely examine the feet, including the soles and the spaces between the toes.



5 Look at the neck and scalp (the area of the head covered by hair). You may want to use a comb or a blow dryer to move hair so that you can see better.



By checking your skin each month, you will become familiar with what is normal. If you find anything unusual, see your doctor right away. Remember, the earlier skin cancer is found, the better the chance for cure.

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